(No Model.)

J. D. BISHOP.

MACHINE FOR COVERING CABLES.

No. 450,131. Patented Apr. 14, 1891.

Fig. 1.

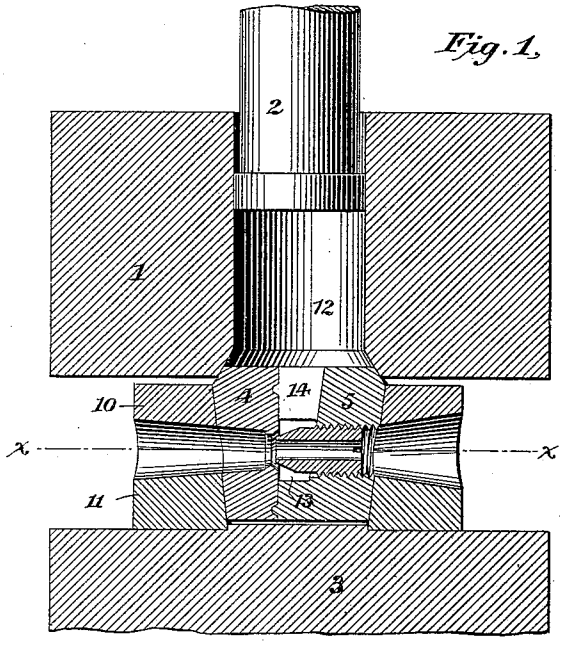


Fig. 2.

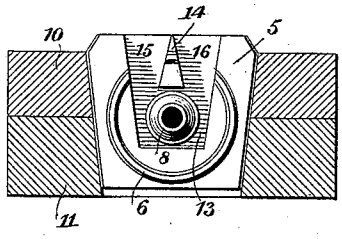
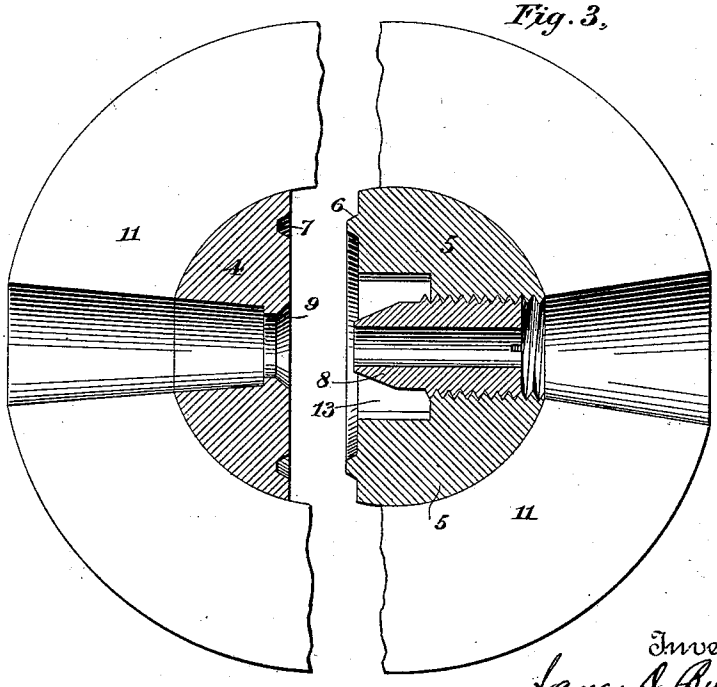


Fig. 3.



Witnesses
Geo. W. Breck.
Edward Thorpe.

Inventor
James D. Bishop
By his Attorneys
Read & Worthington

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JAMES D. BISHOP, OF NEW YORK, N. Y.

MACHINE FOR COVERING CABLES.

SPECIFICATION forming part of Letters Patent No. 450,131, dated April 14, 1891.

Application filed December 6, 1890. Serial No. 373,739. (No model.)

To all whom it may concern:

Be it known that I, JAMES D. BISHOP, a subject of the Queen of Great Britain, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Machines for Covering Cables; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in that class of machines commonly employed in making lead tubing, and is more particularly designed for use in covering electrical conductors or cables with a protective sheath of lead.

The object of the invention is to remedy defects inherent in the construction of machines of this character as hitherto made and used. It is the usual practice in machines of this character to place a pair of "blocks" of iron or steel, divided in a horizontal plane and suitably perforated for the carriage of the conductor through the covering-chamber and the admission of metal thereto, between a fixed plunger and the movable ram of a hydraulic press. The blocks are brought into intimate connection by means of bolts; but by reason of the enormous pressure brought to bear and the flexure and expansion of the parts under the heat at which the operation is conducted it is almost impossible to prevent the lead from forcing its way into the seam at the plane of division of the blocks, thus creating irregularities in the thickness and cross-section of the lead covering. The pressure of the lead amounts to hundreds of tons, to resist which the core-bar must be provided with a long seat, the fit of which must be almost absolutely perfect or the lead will find its way into the interstices between the bar and the block. It must also be of sufficient cross-section to resist the pressure of the lead without flexure, which would result in an irregular cross-section of the lead tube. The perfect adjustment of apparatus to meet all these requirements requires a perfection of workmanship difficult, if not impossible, to maintain in constant exactitude. Besides this the enormous increase of strain, due to the heat of gas-blasts on the outer surface to maintain the lead in a condition fit for working, results in a distortion of adjustment between the die and core-bar, further intensifying irregularities in the pipe-covering created by the other causes above mentioned. One cause of these difficulties in machines as ordinarily constructed is that they offer the least resistance in the line of greatest force. It is therefore the prime object of my invention to produce a machine in which a maximum resistance will be offered in the line of greatest strain.

Another object of the invention is to so arrange the parts that the strain, instead of, as hitherto, tending to disturb their relation by forcing them asunder and thereby distorting their adjustment, shall, on the contrary, tend to bind them closer together and insure uniformity of adjustment irrespective of the amount of strain.

To these ends my invention consists in binding the separable parts constituting the walls of the chamber containing the die and core-bar by removable bands or rings adjustable with reference to the wall, so as to maintain the several parts in close engagement.

My invention also consists in giving a conical or tapering shape to the exterior surface of the assembled sections forming the chamber and providing a confining band or bands co-operating therewith by an interiorly-tapering surface.

The invention further consists in placing these tapering co-operating surfaces with their axial line parallel to the direction of pressure, so that the pressure serves to lock the parts more firmly and intimately together.

My invention also comprises details of structure which will hereinafter be particularly described, and definitely indicated in the appended claims.

In the accompanying drawings, which illustrate the invention, Figure is a cross-section of part of a press provided with my improvements. Fig. 2 is a central section of the covering-chamber and confining-rings on a plane at right angles to that indicated in Fig. 1. Fig. 3 is a horizontal section of Fig. 1 on the line *x x*.

1, 2, and 3 represent parts of a hydraulic press as used in lead-pipe making, the construction of which is so well known as to re-

quire no further description. The parts 4 and 5, which I term the "center pieces," are constructed so as to fit accurately together, one part being provided with a circular ridge 6 and the other part with the circular depression 7, so located as to bring the two center pieces into accurate adjustment when the ridge 6 lies within the recess 7. When so assembled, the two center pieces form the walls of a forming-chamber. In the piece 5 is seated the core-bar 8, capable of being adjusted by means of a screw co-operating with a threaded opening in the piece 5. The outward or inward adjustment of the core-bar varies the thickness of the lead pipe formed between it and the die 9, formed in the wall of the other center piece 4. The exterior surface of the center pieces when assembled is cone-shaped, the axial line of the cone being parallel with the direction of pressure. A conical seat is provided for the center pieces in one or more steel or iron bands 10 11, two bands preferably being used, provided with a flaring orifice at their surface of junction adapted to admit the unleaded conductor to and lead the leaded conductor from the covering-chamber. The co-operating surfaces of the center-pieces are planed perfectly true, so as to bring them into intimate contact. The center piece 5 is preferably made larger than the center piece 4 to permit a recess to be formed therein, constituting a receptacle for the lead, and passages communicating between said receptacle and the reservoir 12 of metal. This chamber is indicated at 13, a tongue of metal 14 projecting from the body of the piece lying over the core-bar, so as to compel an equal flow of lead to each side of the core-bar and forming the conduits or channels 15 16, through which the lead passes to the forming-chamber.

As illustrated in the drawings, only the core-bar is shown adjustable, though it will be evident that the die might also be made adjustable. Either or both can be made adjustable, as desired, this being a mere structural detail which may be varied at the will of the designer. In assembling the parts for operation the core-bar is first adjusted to the thickness of pipe required. The centers are then placed face to face and dropped into the confining bands or rings.

In order to secure a tight fit between the top of the centers and the bottom of the lead-reservoir, I prefer to bevel the adjoining faces of each, as shown in the drawings; or, if the top of the centers lies below the upper surface of the confining-bands, the latter may be beveled to co-operate with the walls of the reservoir.

It will be evident from the structure hereinbefore described that the greater the pressure upon the parts the closer they will be squeezed together and the less will be the chance for distortion or change of adjustment. This is just the reverse of what takes place in the old style of machines, where the lines of greatest force are at right angles to the line of least resistance, and therefore the tendency of the pressure is to open out and distort the blocks. To meet this difficulty in the old machines, the parts were locked together by bolts, the parts being distorted first by the enormous and almost unavoidably unequal screw-pressure brought to bear in adjustment, and afterward by the combined strain of the heat and lead pressure.

If in my new machine, by carelessness or accident on the part of the operator, the faces of the centers should not be placed in close juxtaposition in starting the machine into operation, the pressure of the lead will automatically accomplish such a result.

When it is desired to dismount or change the dies, the whole is removed from the press, the upper band, with the centers therein, is taken off from the lower one, the upper band is then reversed, and the centers will fall out if the end of the lead pipe just made is cut off close to the die-center 4, which may be very easily done. The conical section of the die and the location of the orifice formed by the bands so as to lie partly on one band and partly on the other render this a matter of easy accomplishment.

The construction herein described renders the machine efficient in action, economical in first cost, insures a lightness of the parts, enabling them to be very readily handled, insures uniformity in the thickness of the pipe produced, and relieves the operator from the great care necessary with machines as heretofore constructed.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. Means for forming pipe or similar tubular articles, comprising a box or forming-chamber composed of separable sections bound together by removable bands encircling the sections in planes transverse to the plane of division.

2. A pipe-press provided with a forming box or chamber composed of separable sections having a tapering exterior surface and bound together by a confining ring or rings provided with tapering interior walls to receive the sections, the parts being assembled so that the plane of division of the sections is in the direction of pressure.

3. A pipe-press provided with a forming box or chamber composed of separable sections bound together by removable bands encircling the sections transversely to the plane of division, the sections being provided with an interlocking connection to prevent relative displacement.

4. A pipe-press provided with a forming box or chamber composed of separable sections bound together by removable bands encircling the sections transversely to the

plane of division, the bands forming at their plane of junction a duct for leading the pipes or covered conductor from the die.

5. A pipe-press provided with a forming box or chamber composed of separable sections, the die being formed in one section, the other section containing the core-bar, and a metallic tongue integral with one of the sections overhanging the core-bar and forming channels for guiding the metal equally to each side of the core-bar.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES D. BISHOP.

Witnesses:
HENRY R. STREHMEL,
E. C. GRIGG.